

Bay Region Atmospheric Chemistry Experiment (BRACE)

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The Tampa Bay Estuary Program (TBEP) was formed in 1991 to assist the community in developing a comprehensive plan to restore and protect Tampa Bay. The ecological indicator of the health of the Bay is the coverage of seagrasses, historically in decline, which are important to the Bay's aquatic habitat and food web. Seagrass decline is linked to excess of plant-stimulating forms of nitrogen to the bay, promoting algae growth, which shades out light needed to sustain seagrasses. One element of the TBEP is a private-local-state, multi-agency Nitrogen Management Consortium that seeks to limit nitrogen loading to the Bay to the 1992-1994 average. Present estimates suggest atmospheric deposition comprises ~ 30% of the nitrogen budget of the Bay. This estimate is based, however, on limited ambient monitoring data and simple models.

In BRACE, US EPA NERL will join with Florida DEP and TBEP to increase the intensity, sophistication and spatial scope of monitoring and modeling and provide better information on air quality in the Tampa Bay area. The result will be improved estimates of the effects of local and regional emissions of oxides of nitrogen (NO_x) on the Bay and the benefits to be gained from implementation of emissions reduction strategies. The two primary objectives of BRACE are to (i) provide TBEP with robust estimates of deposition of biologically active forms of nitrogen to Tampa Bay and its watershed and (ii) assess the Tampa Bay air quality before and after the TECO Gannon Station re-powering from coal to natural gas. EPA NERL is contributing to BRACE by participating in atmospheric monitoring and modeling activities. Specifically NERL will conduct source apportionment modeling to identify the sources of observed NO_x and PM_{2.5} and run a state-of-the-art model to evaluate the formation of ozone and secondary aerosols.

BRACE Partners:

US EPA National Exposure Research Laboratory, Department of Environmental Protection, Tampa Bay Estuary Program, Tampa Bay regional utilities and industries, US EPA Region 4, NOAA Air Resources Laboratory, Environmental Protection Commission of Hillsborough County, Pinellas County Department of Environmental Management, University of South Florida, University of Miami

BRACE Elements:

Ambient Monitoring —	54 months, multi-site, multi-species Two 28-day intensive sampling periods (May, 2002; TBD, 2004)
Modeling —	Advanced Meteorological, Dispersion, and Receptor models
Source Testing —	Natural, Mobile, & Stationary Sources

BRACE Timeline:

Project Planning —	January, 1999 - December, 2001
Field Monitoring —	January, 2000 - June, 2005
Analysis & Reporting —	November, 2004 - December, 2005

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